What is claimed is:

1. A method of forming a microlens structure comprising:

a) providing a substrate having a surface with photo-elements on the surface;

b) depositing a transparent material overlying the surface of the substrate;

c) depositing and patterning a photoresist layer overlying the transparent material to form openings to expose the transparent material;

d) introducing a first isotropic etchant into the openings and etching the transparent material where exposed to form initial lens shapes having a radius;

e) stripping the photoresist;

f) exposing the transparent material to a second isotropic etchant to increase the radius of the lens shapes; and

g) depositing a lens material overlying the transparent material, whereby the lens shapes are at least partially filled with lens material.

2. The method of claim 1, wherein the transparent material is silicon dioxide, or glass.

3. The method of claim 2, wherein the first isotropic etchant is buffered HF.

4. The method of claim 1, wherein the lens material has a higher refractive index than the transparent material.

5. The method of claim 2, wherein the lens material comprises HfO_2, TiO_2, ZrO_2, or ZnO_2.

6. The method of claim 1, further comprising forming an AR coating overlying the lens material.

7. The method of claim 5, further comprising forming a single layer AR coating overlying the lens material.

8. The method of claim 7, wherein the single layer AR coating comprises silicon dioxide, or glass.

9. The method of claim 1, further comprising planarizing the lens material.

10. The method of claim 9, wherein planarizing the lens material comprises chemical mechanical polishing.

11. The method of claim 9, wherein planarizing comprises reflowing the lens material.

12. The method of claim 1, further comprising adjusting the overall thickness of the transparent material prior to depositing the lens material by using an anisotropic etchant to etch the transparent material.

13. The method of claim 12, further comprising planarizing the lens material.

14. The method of claim 13, further comprising forming an AR coating overlying the lens material.

15. A method of forming a microlens array over a CCD array comprising:

a) providing a substrate comprising the CCD array;

b) depositing a transparent layer comprising silicon dioxide, or glass overlying the CCD array;

c) depositing and patterning a photoresist layer overlying the transparent layer to form openings to expose the transparent material;

d) introducing a first isotropic etchant into the openings and etching the transparent material where exposed to form initial lens shapes having a radius;

e) stripping the photoresist;

f) exposing the transparent material to a second isotropic etchant to increase the radius of the lens shapes;

g) depositing a lens material comprising HfO_2, TiO_2, ZrO_2, or ZnO_2 overlying the transparent material, whereby lenses are formed by the lens material at least partially filling the lens shapes;

h) planarizing the lens material using CMP; and

i) forming an AR coating overlying the lens material.

16. A CCD array comprising:

a) an array of CCD pixels on a substrate; and

b) a lens array in contact with the array of CCD pixels;

wherein the lens array comprises a transparent material having concave indentations, and a lens material at least partially filling the concave indentations forming a plano-convex lens in contact with the transparent material.

17. The CCD array of claim 16, wherein the transparent material comprises silicon dioxide, or glass.

18. The CCD array of claim 16, wherein the lens material comprises HfO_2, TiO_2, ZrO_2, or ZnO_2.

19. The CCD array of claim 16, further comprising an AR coating overlying the plano-convex lens.